

**Neotype designation for *Heterogynis affinis* RAMBUR, 1837,  
with notes on previous interpretations of the species  
(Lepidoptera: Zygaenoidea, Heterogynidae)<sup>1</sup>**

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**Abstract**

Taxonomic assessment of the South Iberian populations of the genus *Heterogynis* RAMBUR, 1837 is impossible without correct identification of *Heterogynis affinis* RAMBUR, 1837, whose name is currently regarded as a *nomen dubium* because its type, a single male specimen, is lost and its original description is insufficient to unequivocally recognise the species. As the species is undoubtedly valid, we here designate a neotype for it and diagnose and illustrate it so as to fix its identity beyond doubt. The taxonomic history of the species is also reviewed

**Resumen**

La asignación taxonómica de las poblaciones del género *Heterogynis* RAMBUR, 1837 del sur de la península ibérica no resulta posible sin la correcta identificación de *Heterogynis affinis* RAMBUR, 1837, cuyo nombre actualmente se considera *nomen dubium*. El ejemplar tipo, un macho, se ha perdido y la descripción original es insuficiente para reconocer inequívocamente la especie. Dado que se trata de una especie indudablemente válida, se designa un neotipo, se describen sus caracteres diferenciadores y se ilustra para establecer con claridad su identidad. Además, se analiza la historia taxonómica de la especie.

**Introduction**

The taxonomy of *Heterogynis* RAMBUR, 1837 in the southern part of the Iberian Peninsula is still unsatisfactory. The assignment of populations in this region to species is currently impossible in want of knowing the proper identity of *Heterogynis affinis* RAMBUR, 1837, which has long been incorrectly treated in the literature. The designation of a neotype for its name is therefore essential. The species was described from a single male from the Sierra de Antequera in the province of Málaga, and the type specimen is considered lost (ZILLI & RACHELI 1989). Incidentally, the same applies to the type material of *Heterogynis paradoxa* RAMBUR, which was described by RAMBUR (1837) in the same publication. The species of *Heterogynis* are largely similar in habitus and mostly difficult to distinguish, and, in contrast to the characteristic *H. paradoxa*, *H. affinis* cannot be identified from the original illustration (RAMBUR, 1837, Plate 14, Fig. 9), assuming that this depicts the type specimen. The figure is not diagnostic and shows features that also apply to some other *Heterogynis* species, such as *H. penella* (HÜBNER, 1819) and *H. canalensis* CHAPMAN, 1904. However, *H. penella* and *H. canalensis* have not been recorded from Andalusia, and recent collections show that both are not common in the southern regions of the Iberian Peninsula (DE FREINA 2014a, 2014b).

**Abbreviations**

CdFM    Collection DE FREINA, Munich  
GP      Genital preparation  
MWM    Lepidopterological Museum WITT, Munich  
ZSM      Zoologische Staatssammlung München (Bavarian State Collection of Zoology, Munich).

<sup>1</sup> Studies on the family Heterogynidae — Studien zur Familie Heterogynidae — Estudios de la familia Heterogynidae, no. 15.

## History of taxonomic treatments of *H. affinis*

*Heterogynis* is known to be a highly variable genus, even at the interpopolar level. RAMBUR'S description of *H. affinis* (1837) provides no useful clues to its identity except for a reference to longer antennal rami, and consequently it was interpreted in different ways by later authors.

The following treatments exist in the literature:

BOISDUVAL (1840)	as distinct species
DUPONCHEL ([1845])	as distinct species
HEYDENREICH (1851)	as distinct species
BRUAND (1853)	as <i>H. affiniella</i> (an unjustified emendation), accompanied by a redescription and illustration and an incorrect record of it occurring in France
WALKER (1854)	as distinct species
STAUDINGER (1861)	as distinct species
RAMBUR (1866)	as cf. <i>H. penella</i>
STAUDINGER (1871)	as synonym of <i>H. penella</i>
KIRBY (1892)	as distinct species
STAUDINGER & REBEL (1901)	as synonym of <i>H. penella</i>
CHAPMAN (1902)	confused with <i>H. hispana</i> RAMBUR, 1837, described from the surroundings of Barcelona
SEITZ (1912)	as a form of <i>H. canalensis</i> CHAPMAN, 1904 (thus of infrasubspecific status)
ROTHSCHILD (1917)	as distinct species, with <i>H. canalensis</i> as synonym
STRAND (1923)	as an infrasubspecific variety of <i>H. penella</i>
AGENJO (1968)	as distinct species
GÓMEZ BUSTILLO (1980)	as synonym of <i>H. penella</i>
GÓMEZ BUSTILLO & ARROYO VARELA (1981)	as synonym of <i>H. penella</i>
ZILLI & RACHELI (1989)	review of taxonomic history without determination of status
DE FREINA & WITT (1990)	not mentioned
KARSHOLT (1996)	not mentioned
LERAUT (2006)	not mentioned
DE FREINA (2014)	as distinct species, illustration of two males and one female cocoon (but mis-determined) (Figs. 19, 20, 26), with note on surmised distribution
DE FREINA (2015)	as valid species, illustration of two males (Figs. 13, 14) and comparison with other <i>Heterogynis</i> species.

The proper identity of *H. affinis* remained unresolved as no Andalusian specimens of *Heterogynis* were available for study until a few years ago, except of the well-known *H. andalusica* DANIEL, 1966. Recently collected specimens not representing *H. andalusica* now allow a more accurate assessment of the morphological differences between, and thus the delimitation of, the different species occurring in the region. However, the status of the South Iberian populations remains problematic, especially since the discovery of several populations in the area, but it is becoming increasingly evident that the populations of the Algarve and western Andalusia are not conspecific with those of eastern Andalusia (of the provinces Málaga and Granada). This is not surprising given the low vagility of the males and the winglessness of the females.

### Neotype designation and revision of type locality for *H. affinis* RAMBUR, 1837 (Figs. 1 )

The designation of a neotype and revision of the type locality of *H. affinis* is made in accordance with Articles 75 and 76 of International Code of Zoological Nomenclature (KRAUS, 2000) and meets all conditions of these articles. As no specimens from RAMBUR'S original type locality (Sierra de Antequera) exist in collections and as attempts by the second author to find additional specimens there were unsuccessful, we here select a male from the nearby Sierra de Mijas (Province Malaga, 640 m, 15.IV.2019, leg. Roberto GONELLA) that agrees well in habitus and coloration with the male illustrated by RAMBUR (1837) as neotype for *H. affinis*. It is labelled as follows "Neotypus *Heterogynis affinis* RAMBUR, 1837, des. by DE FREINA & MONASTERIO LEÓN 2019" and "DNA-tissues control number Rvcoll19D206, Instituto de Biología Evolutiva (CSIC-UPF), Barcelona; and deposited in the Zoologische Sammlung des Bayerischen Staates, München (Bavarian State Collection of Zoology, Munich).

## Diagnosis of *H. affinis* (Figs 2–13).

*Heterogynis affinis* belongs to the nominate subgenus and in the *H. penella* species group, whose most striking feature is the form of male antennae, which are shorter than those of the other Iberian species of the subgenus and have longer proximal rami but the distal rami generally shortened to the tip of the antenna (see BRUAND 1853, ZILLI & RACHELI 1989). In *H. affinis* there is no colour difference between the fore and hind wings, as typical in *H. canalensis* (fig. 11). The male genitalia, as typical for the *H. penella* group, are oval, squat, not more slender than those of *H. canalensis* or *H. paradoxa*. The bipartite uncus is short, strongly sclerotized and hardly curved, the subscaphium is oblong and the spicules of the vesica are less strongly sclerotized, very fine and only dense proximally. The valves are short and stocky, and the sclerotization of the abdominal segments is very similar to that of *H. chapmani* DE FREINA, 2014 from Central Spain. In size the males from the Málaga/Granada region are somewhat smaller than those from elsewhere, but due to intrapopulation differences and the small number of specimens known, size carries no taxonomic significance. Diagnostic features of the preimaginal stages and life history will be outlined in a future publication, after evaluation of molecular biological studies.

## Acknowledgments

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## Zusammenfassung

Korrekte Diagnosen für südiberische Populationen der Gattung *Heterogynis* RAMBUR, 1837 sind derzeit nicht möglich ohne eine genaue Bestimmung der Art *Heterogynis affinis* RAMBUR, 1837, deren Name als nomen dubium geführt wird, da ihr einziger Typus, ein Männchen, verschollen und die ursprüngliche Beschreibung mehrdeutig ist. Da die Art jedoch unzweifelhaft berechtigt ist, legen wir ihre Identität durch die Bestimmung eines Neotypus fest, ergänzt durch eine Diagnose mit Abbildungen. Zusätzlich werden Taxonomie und Merkmale von *H. affinis* besprochen und frühere Bewertungen chronologisch gelistet.

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**Fig 1:** *Heterogynis affinis* Neotype ♂: Spain, Province Málaga, sierra de Mijas, 640 m, 15.IV.2019, leg. R. GONELLA (in ZSM).

**Fig 2:** *Heterogynis ?affinis* ♂: Spain, Province Cádiz, Montes de Propios, Natural Park Los Alcornocales, T. M. Jerez de la Frontera, 342 m, 10.VI.2018 (Foto J. M. AMARILLO).

**Fig 3:** *Heterogynis canalensis* ♂. Spain, Province La Rioja, Matute, 700 m, 18.VI.2010 (Foto Y. MONASTERIO LEÓN).

**Fig 4–7:** Male antennae. **4:** *H. affinis*, **5:** *H. canalensis*, **6:** *H. paradoxa*, **7:** *H. penella*.

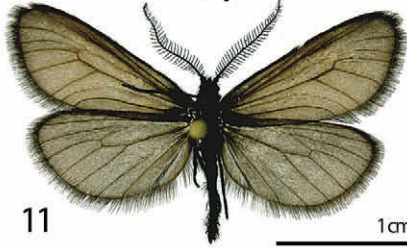
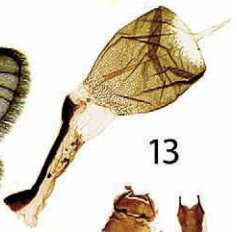
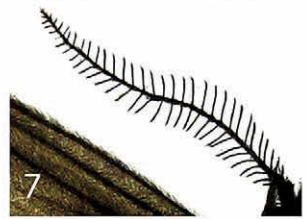
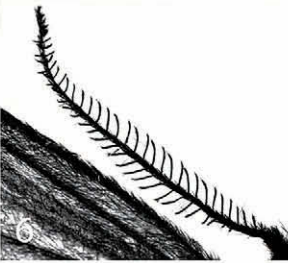
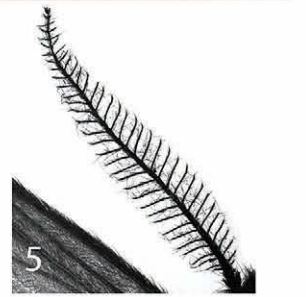
**Fig 8–12:** Comparative illustration of *Heterogynis* species. (scale bar = 1 cm). **8:** *H. affinis* ♂, Spain, province of Granada, 11.VI.[19]24 (CdFM). **9:** *H. ?affinis* ♂, Portugal, Algarve, Bensafirim, ex larva (XII.2018) I.2019, leg. et cult. Y. MONASTERIO & R. ESCOBÉS (CdFM). **10:** *H. penella* ♂, France, Hautes Alpes, Briançon, Col de Lautaret, 1700 m, 14.VII.1951, leg. E. PFEIFFER (MWM). **11:** *H. canalensis* ♂, Spanien, province of Burgos, Montes de Ova, Monasterio de Rodilla, 950–1100 m, 20. VII.1993, leg. DE FREINA (MWM). **12:** *H. paradoxa bejarensis*, Zentralspanien, sierra de Gredos, Hoyos del Espino, Cast[ilien], 1400 m, 18.VII.1936, ex coll. REISSER (MWM).

**Fig. 13:** *Heterogynis ?affinis* ♂. Genitalia (ventral aspect, phallus lateral, vesica everted) and pattern of abdominal tergites/-sternites (same data as fig. 2) (GP MWM 34801, leg. DE FREINA, in MWM).



**Neotypus**  
*Heterogyis affinis*  
Rambur, 1837  
des. by de Friem &  
Monasterio León 2019

España
Prov. Malaga
Sierra de Mijas
720 m 15.IV.2019
leg. R. Gonella



1cm

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